Nader Bou Hamdan

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PROFESSIONAL SUMMARY

Mechatronics Engineering student with hands-on experience designing and prototyping electro-mechanical systems, sensor-integrated robotics, and automated control systems. Proficient in SolidWorks, MATLAB, Arduino, and Linux-based development. Passion in building real-world robotics solutions, system integration, and iterative hardware design.

EXPERIENCES

Junior Consultant, Full Time | MADA International *01/2025 – Present*
- Collaborated with cross-functional teams to support client consultations; conducted data collection and analysis to support research in data-driven solutions and technical reporting.
- Assisted in developing training toolkits, including technical materials, structured learning exercises, and delivery guides.

Lead Instructor, Contract | Freelance & Partnered Programs *06/2023 – Present*
- Led 15+ hands-on sessions covering mechatronics systems, guiding learners through real-world project development.
- Developed software development exercises focused on game-development using JavaScript and general Python courses.

Transformer Models Researcher, Intern | Ascend Solutions *07/2024 – 08/2024*
- Evaluated retrieval-augmented generation (RAG) techniques and fine-tuned BART models, validating output accuracy through structured test sets and clinical report benchmarks using Python libraries.
- Designed and tested a preprocessing pipeline for medical records, enabling compatibility with transformer-based LLMs.

Audiovisual System Design Engineer, Intern | Black Arrow Security and Systems *06/2024 – 09/2024*
- Integrated AV and IT infrastructure across multiple commercial sites, including designing two real-time event systems for Qatar's 2nd-ranked school; collaborated with electrical and QA teams to ensure system performance.
- Interpreted schematics and conducted hardware validation for sensor and AV system integration across commercial sites, producing 12+ documentation sets on field robustness and deployment feedback.
- Troubleshot networking issues across the company, coordinating with IT support and field teams to restore operations.

Full Stack Web Developer, Part Time | ITP Media Group *05/2023 – 11/2023*
- Developed internal dashboards and system monitoring tools using Angular, Node.js, Git, and Bash to support backend performance tracking; handled backend logic and testing procedures.
- Automated data validation workflows and collaborated with QA to resolve integration issues and streamline bug reporting.

PROJECTS

Derma Detect | AI-Powered Assistive Robot
- Achieved diagnostic accuracy of 90% across 8 skin condition classes by training and fine-tuning a XceptionNET CNN model using TensorFlow & PyTorch through a pipeline of Raspberry pi captured images from the system.
- Built a mobile robotic system with integrated sensors and camera control for real-time diagnosis; iterated hardware design using SolidWorks and Arduino for robust field testing and deployment.
- Reduced system downtime by 30% through sensor calibration, technical reporting, and environment setup.

B.O.T.Y. | Robotic Bartender
- Designed and built a fully automated multi-ingredient liquid dispensing system using Arduino-controlled actuators, integrating fluid systems, precise volume control, and mechanical movement coordination.
- Ran signal timing and latency tests, improving shaker and conveyor belt control accuracy by 20% via MATLAB simulations and fuzzy logic control, and validated modular component design for future app-controlled integration.

Smart Grid System | Logic-Based Energy Distribution Controller
- Designed and simulated a smart power distribution system using PSpice and Quartus, implementing logic control for real-time load balancing and circuit fault isolation.
- Verified performance through signal tracing, logic analysis, and multimeters to ensure safe switching and load response.
- Integrated logic ICs with analog components such as sensors and voltage regulators to manage dynamic energy routing.

SKILLS

Robotics Tools: Python, C++, Linux, ROS2, Java, JavaScript, SQL, Git, Bash, SolidWorks, MATLAB, AutoCAD, KiCad
Testing & Prototyping: Oscilloscopes, Multimeters, Mechanical Testing, Breadboarding, 3D Printing
Languages: English (Native), Arabic (Fluent), French (Beginner)

EDUCATION

Lebanese American University (LAU), Chartered by the State of New York | Byblos, Lebanon *09/2020 – 06/2025*
Bachelor of Engineering (BE) in Mechatronics Engineering (ABET Accredited)

AWARDS & CERTIFICATIONS

2nd Placement, Engineering Student Design Competition | Robotics Exoskeleton
Certified SolidWorks Associate | CSWA